



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANUAL TRANSMITTAL SHEET

Release
6-27
Date
06/05/2012

Subject

California State Office
H-6840-1 - Special Status Plant Management

1. Explanation of Materials Transmitted: This release transmits a complete revision of California State Office Manual Handbook H-6840-1, the Special Status Plant Management Manual Handbook for California BLM. This Handbook complements California BLM Manual Supplement 6840.06).
2. Reports Required: None.
3. Materials Superseded: Manual pages superseded by this release are listed under "REMOVE" below. No other directives are superseded.
4. Filing Instructions: File as directed below.

REMOVE

All of H-6840-1 (Rels. 6-25
and 6-26)

(Total: 35 pages)

INSERT

H-6840-1

(Total: 47 pages)


State Director

Special Status Plant Management



BLM Manual Handbook 6840-1

H-6840-1 – SPECIAL STATUS PLANT MANAGEMENT

Cover photo of Pine Hill flannelbush
(*Fremontodendron decumbens*)
by Mark W. Skinner @
USDA-NRCS PLANTS Database

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CHAPTER I**I. INTRODUCTION**

This handbook provides direction on the management of special status plants. Special status plants are those plant species that are Federally listed as endangered or threatened, officially proposed for Federal listing as endangered or threatened, or listed as sensitive by the California State Director. The handbook expands on the policy elaborated in BLM Manual 6840 and California BLM Manual Supplement 6840.06 and establishes the procedures to be used in complying with that policy.

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CHAPTER II**II. MANAGEMENT OF SPECIAL STATUS PLANTS****A. Federally Listed Threatened and Endangered Plant Species.**

Federally listed threatened and endangered plant species are treated as special status species. See BLM Manual 6840 for the policy on the management of these species. In addition to the management prescribed in BLM Manual 6840, California-BLM will:

1. Include Federally listed plant species as priority species in land use plans (BLM Manual 1601, Land Use Planning, and BLM Manual Handbook 1601, Land Use Planning Handbook).
2. Develop and implement rangewide and/or site-specific management plans for Federally listed plant species that include site-specific habitat and population management objectives designed for recovery, as well as the management strategies necessary to meet those objectives.
3. Ensure that BLM activities affecting the habitat of Federally listed plant species are carried out in a manner consistent with the objectives for managing those species.
4. Develop site-specific management objectives for each occurrence of listed threatened and endangered plant species on BLM lands and/or that will be affected by BLM actions.
 - a. These site-specific management objectives can be part of Resource Management Plans, rangewide or site-specific management plans, or activity plans developed for other resources.
 - b. Until site-specific management objectives are prepared for each Federally listed plant occurrence, the default management objective for each occurrence will be to maintain or improve the species and its habitat at each occurrence.
5. Monitor populations and habitats of Federally listed plant species to determine whether management objectives are being met.

B. Plant Species Proposed for Federal Listing.

Plant species proposed for Federal listing are treated as special status plant species. See BLM Manual 6840 for the policy on the management of these species. In addition to the management prescribed in BLM Manual 6840, California-BLM will:

1. Include Federally proposed plant species as priority species in land use plans (BLM Manual 1601, Land Use Planning, and BLM Manual Handbook 1601, Land Use Planning Handbook).

2. Develop and implement rangewide and/or site-specific management plans for Federally proposed plant species that include site-specific habitat and population management objectives designed for recovery, as well as the management strategies necessary to meet those objectives.

3. Ensure that BLM activities affecting the habitat of Federally proposed plant species are carried out in a manner consistent with the objectives for managing those species.

4. Develop site-specific management objectives for each occurrence of proposed threatened and endangered plant species on BLM lands and/or that will be affected by BLM actions.

a. These site-specific management objectives can be part of Resource Management Plans, rangewide or site-specific management plans, or activity plans developed for other resources.

b. Until site-specific management objectives are prepared for each Federally proposed plant occurrence, the default management objective for each occurrence will be to maintain or improve the species and its habitat at each occurrence.

C. Sensitive Plant Species.
The California State Director may designate sensitive species that are then treated as special status species.

1. The following plant species are sensitive species in California:

a. Species that are candidates for listing under the Endangered Species Act.

b. Species that have been delisted from the Federal list of endangered and threatened species for the five years following delisting.

c. Unless specifically excluded by the State Director, all plants listed as rare, threatened, or endangered by the State of California.

d. Unless specifically excluded by the State Director, all plants with a California Rare Plant Rank of 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere) on the Special Vascular Plants, Bryophytes, and Lichens List maintained by the California Department of Fish and Game (<http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf>) that are on BLM lands or affected by BLM actions and that are not already special status plants by virtue of being Federally listed or proposed.

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e. Other plant species not in categories a-d above that the State Director designates as sensitive.

2. Management of Sensitive Plant Species. The BLM will carry out management, consistent with the principles of multiple use, for the conservation of sensitive plant species and their habitats and will ensure that actions it authorizes, funds, or carries out do not contribute to the need to list any of these species as threatened or endangered. Specifically, BLM-California will:

a. Determine the distribution, abundance, reasons for current status, and habitat needs for sensitive plant species occurring on lands administered by the BLM and evaluate the significance of BLM lands or actions in maintaining those species.

b. For those plant species where BLM lands or actions have a significant effect on their status, manage the habitat to conserve the species by:

1). Including sensitive plant species as priority species in land use plans (BLM Manual 1601, Land Use Planning, and BLM Manual Handbook 1601, Land Use Planning Handbook).

2). Developing and implementing rangewide and/or site-specific management plans for sensitive plant species that include site-specific habitat and population management objectives designed for recovery, as well as the management strategies necessary to meet those objectives.

3). Ensuring that BLM activities affecting the habitat of sensitive plant species are carried out in a manner consistent with the objectives for managing those species.

4). Developing site-specific management objectives for each occurrence of sensitive plant species on BLM lands and/or that will be affected by BLM actions.

a). These site-specific management objectives can be part of Resource Management Plans, rangewide or site-specific management plans, or activity plans developed for other resources.

b). Until site-specific management objectives are prepared for each sensitive plant occurrence, the default management objective for each occurrence will be to maintain or improve the species and its habitat at each occurrence.

5). Monitoring populations and habitats of sensitive plant species to determine whether management objectives are being met.

c. Prepare biological evaluations that assess the effects of proposed actions that may adversely affect sensitive plant species. These evaluations can be standalone documents or included as part of environmental documents prepared pursuant to the National Environmental Policy Act.

1). To the extent possible, modify proposed actions to avoid adverse impacts to sensitive plant species.

2). Where avoidance is not possible, develop measures to mitigate impacts to sensitive plant species.

3). In conducting inventories as part of the NEPA process, survey not only for Special Status Plant Species, but for plant species with Ranks 2 and 4 on the most recent version of the California Department of Fish and Game's *Special Vascular Plants, Bryophytes, and Lichens List*. This meets BLM's obligations under the ongoing Memorandum of Understanding with the California Department of Fish and Game to collect information on plants for inclusion in the California Natural Diversity Data Base.

4). Provide the results of inventory efforts to the California Natural Diversity Data Base.

d. Take no action that adversely affects a sensitive plant species without the approval of the State Director. Approval of such an action shall be contingent upon the State Director's judgment that the evidence in the biological evaluation is sufficient to ensure that the action will not result in the need to list the species in question as threatened or endangered or result in the failure to meet management objectives that have been established for the species in management plans (including land use plans, sensitive species management plans, or other activity level plans).

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CHAPTER III**III. PROCESS FOR DESIGNATING SENSITIVE PLANT SPECIES OR RECOMMENDING CHANGES IN STATUS****A. Designating Plant Species as Sensitive.**

1. Pursuant to BLM Manual 6840 and California Manual Supplement 6840.06, all plant species that are candidates for Federal listing and delisted species in the five years following their delisting are automatically sensitive species. In addition, the California State Director may designate other plant species as sensitive species, as outlined below.

2. By policy (California BLM Manual Supplement 6840.06) all plants with a California Rare Plant Rank of 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere) on the Special Vascular Plants, Bryophytes, and Lichens List maintained by the California Department of Fish and Game (CDFG) (<http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf>) that are on BLM lands or affected by BLM actions and that are not already special status plants by virtue of being Federally listed or proposed are designated as sensitive species in California. Exceptions are any such List 1B species that the State Director has specifically removed from the sensitive species list (see III.B. below). Because not all BLM lands have been inventoried for sensitive plant species, BLM's sensitive plant list for California includes plants that, while not currently documented on BLM lands, are considered by BLM specialists to be highly suspected to occur on BLM lands based on suitable habitat and/or nearness of documented occurrences to BLM lands. These suspected species are designated as sensitive in order to highlight the need for inventory, particularly inventories conducted to assess the effects of ground disturbance. If such inventories uncover a new occurrence on BLM lands, that occurrence is then managed in accordance with the sensitive plant policy elaborated herein. In addition to CDFG List 1B plants, other plant species may be designated as sensitive in accordance with the following procedure.

a. Requests to add plant species to the sensitive species list must be submitted in writing to the State Director. The requests must demonstrate clearly that designation of the species as sensitive is warranted. The request must be based on biological information for the species and its habitat and should detail threats or potential threats to the species and its habitat. The request must also detail how the special management afforded by designation will help the species.

b. Following review by the State Director the species is either designated as sensitive through an Instruction Memorandum or a California Manual Handbook Supplement or the request for designation is denied, in which case the State Director documents the reasons for denial in a memorandum to the District or Field Office Manager who initiated the request.

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c. The information provided by the District or Field Office Manager in support of adding a species to the sensitive species list will be conveyed by the Field Office Manager, District Manager, or State Director to the CDFG California Natural Diversity Data Base.

B. Removing Plant Species from the Sensitive Species List.

1. District and Field Office Managers may request that a plant species be removed from the sensitive species list. Such requests must be accompanied by evidence that demonstrates the species clearly does not merit sensitive species status. Requests must be based on biological information on the species and its habitat.

2. Following review by the State Director the species is either removed from the sensitive species list through an Instruction Memorandum or a California Manual Handbook Supplement or the request for removal is denied, in which case the State Director documents the reasons for denial in a memorandum to the District Manager or Field Office Manager who initiated the request.

3. The information provided by the Field Office Manager in support of removing a species from the sensitive species list will be conveyed by the Field Manager, District Manager, or State Director to the CDFG California Natural Diversity Data Base.

C. Recommending Changes in Status for Federally-listed Plant Species and/or Their Critical Habitats.

1. Petitions to the Fish and Wildlife Service (FWS) to list or delist plant species or revise critical habitat.

a. Guidelines for petitioning the FWS to list or delist species or revise critical habitat are found in BLM Manual 6840.1B.

b. Only the Director may submit petitions to FWS. District and Field Office Managers may request that the State Director submit a request to the BLM Director to petition FWS to list or delist a species or revise critical habitat. This request must be based solely on biological information on the species and its habitat and must address the five factors for listing included in section 4 of the Endangered Species Act (ESA). These factors are:

- 1). The present or threatened destruction, modification, or curtailment of its habitat or range.
- 2). Overutilization for commercial, recreational, scientific, or educational purposes.
- 3). Disease or predation.
- 4). The inadequacy of existing regulatory mechanisms.

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5). Other natural or manmade factors affecting its continued existence.

c. Following review by the State Director the petition is either submitted to the Director, with a copy of the transmittal memorandum forwarded to the District or Field Office Manager who submitted the request, or the request to ask the Director to petition FWS is denied, in which case the State Director documents the reasons for denial in a memorandum to the District or Field Office Manager who initiated the request.

2. Requests to FWS to add or remove species from the list of candidate species.

a. The FWS periodically publishes in the Federal Register lists of species that are candidates for listing as threatened or endangered. This list changes depending on new information received by the FWS. The BLM may submit information on the status of candidate species and request that species be added to or removed from the candidate list as appropriate.

b. Only the State Director may submit requests to the FWS to add or remove species from the list of candidate species. District and Field Office Managers may request the State Director submit a memorandum to the FWS to add or remove a species from the candidate species list. This request must be based solely on biological information on the species and its habitat and must address the five factors for listing included in section 4 of the Endangered Species Act and listed under III.C.1.b., above.

c. Following review by the State Director the request is either submitted to the FWS, with a copy of the transmittal memorandum forwarded to the District or Field Office Manager who submitted the request, or the request for change in candidate status is denied, in which case the State Director documents the reasons for denial in a memorandum to the District or Field Office Manager who initiated the request.

3. Petitions to the State of California, Fish and Game Commission, to list or delist species.

a. Pursuant to the California Endangered Species Act, the BLM may submit petitions to the State of California, Fish and Game Commission, to list or delist a species.

b. Only the State Director may submit petitions to the Fish and Game Commission. District and Field Office Managers may request the State Director submit a petition to list or delist a species. This request must include information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat

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necessary for the survival of the species, a detailed distribution map, and any other factors deemed relevant.

c. Following review by the State Director the petition is either submitted to the Fish and Game Commission, with a copy of the transmittal memorandum forwarded to the District or Field Office Manager who submitted the request, or the request for petition is denied, in which case the State Director documents the reasons for denial in a memorandum to the District or Field Office Manager who initiated the request.

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CHAPTER IV**IV. INVENTORY****A. Policy.**

It is BLM policy to conduct inventories to determine the occurrence and status of all special status plant species on lands managed by BLM or affected by BLM actions. This includes pro-active inventories directed toward developing plans or determining the status of plant species and inventories conducted to determine the impacts of BLM planned or authorized actions on any special status plants that might be within the area of a proposed project. Such inventories are to be conducted at the time of year when such plant species can be found and positively identified.

B. Definition and Purpose.

1. Inventory is the periodic and systematic collection of data on the distribution, condition, trend, and utilization of special status plant species (BLM Manual 6600).

2. Special status plant inventories are conducted for many reasons, including:

a. To determine the conservation status of a plant species.

b. To develop plans, including resource management plans, activity plans, recovery plans, species management guides, habitat management plans, coordinated resource management plans, and others.

1). Pursuant to a Memorandum of Understanding with the California Department of Fish and Game, BLM will, for the purpose of preparing resource management plans or other plans covering uses in a specific area, conduct inventories for all vascular plant, bryophyte, and lichen species recognized as “special” by the California Natural Diversity Data Base (<http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf>) while conducting inventories for plants formally designated as special status species by BLM.

2). Data on BLM special status species and on other species recognized as “special” by the California Natural Diversity Data Base (CNDDDB) collected from such inventories shall be provided to the CNDDDB using the procedures described at the following website: http://www.dfg.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp

c. To ensure compliance with the National Environmental Policy Act and the Endangered Species Act by having sufficient information available to adequately assess the effects of proposed actions on special status plants. Assessments of the effects of these actions are documented in biological assessments if the project involves Federally listed species

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or in biological evaluations or NEPA documents if the project involves other special status species. See Section VI (Biological Assessments and Biological Evaluations).

1). Pursuant to a Memorandum of Understanding with the California Department of Fish and Game, BLM will, for the purpose of complying with the National Environmental Policy Act and the Endangered Species Act, conduct inventories for all vascular plant, bryophyte, and lichen species recognized as “special” by the California Natural Diversity Data Base (<http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf>) while conducting inventories for plants formally designated as special status species by BLM,

2). Data on BLM special status species and on other species recognized as “special” by the California Natural Diversity Data Base (CNDDDB) collected from such inventories shall be provided to the CNDDDB using the procedures described at the following website: http://www.dfg.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp

d. To serve as a baseline for monitoring.

3. The specific objectives of an inventory can vary depending on the purpose for the inventory. For example, an inventory may seek to:

a. Locate all populations of a single rare plant species. This would be a logical objective if the purpose of the inventory is to determine the conservation status of a plant species or to develop a species management guide or habitat management plan.

b. Locate all populations of all special status plant species and CNDDDB “special” vascular plant, bryophyte, and lichen species in one location. This would be the objective if the purpose of the inventory is to prepare a biological assessment, NEPA document, or biological evaluation on the effects of a proposed action on all of the special status species in the project area.

c. Provide some measure of the viability of each population of a special status plant, either throughout the species' range or in a smaller area such as a proposed project area. For example, the inventory may seek to determine:

1). Numbers of genets or ramets of the special status plant within each population.

2). Numbers or percent of plants in different stage classes (e.g., seedlings, vegetative, flowering, fruiting).

3). Associated species.

4). Associated habitat features.

5). Degree of habitat disturbance.

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6). Current and potential threats.

d. Provide information on potential or real threats to the habitat of special status plants.

C. Timing and Intensity of Inventory.

1. Prior to conducting an inventory the following valuable reference sources should be researched to determine if special status species are already known from the area:

a. The California Natural Diversity Data Base (CNDDDB) is maintained by the California Department of Fish and Game (CDFG). Access to the CNDDDB is by subscription only. The California State Office purchases a yearly subscription that allows all Field Offices to access CNDDDB spatial data in ArcMap and nonspatial data using the program RareFind. The CNDDDB spatial data and RareFind 3 are currently available to all BLM-California personnel on the Citrix Server. CDFG is currently transitioning to RareFind 4, which will be available only on the CNDDDB website at:

<http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp>. Once this transition is complete, RareFind 3 may be discontinued and BLM's only access to nonspatial CNDDDB data may be via RareFind 4. BLM-California botany and wildlife personnel are regularly given passwords that allow them to access RareFind 4 and other information found at the CNDDDB website.

b. The Biogeographic Information and Observation System (BIOS) is maintained by CDFG. It provides spatial information relevant to special status plants, such as areas designated as critical habitat for Federally-listed endangered and threatened plants. BIOS can be accessed at: <http://www.bios.dfg.ca.gov/>.

c. The Consortium of California Herbaria is a gateway to information from vascular plant specimens housed in herbaria throughout California. Access is free to all users. You can search for records for a particular species or for all records for a geographic area on the search page: <http://ucjeps.berkeley.edu/consortium/>

d. Calflora is a database of plant observations in California. It includes all plant species, not just rare ones, but it should be searched for records that the above two sources might not include. Access for BLM personnel is by subscription only. In recent years the California State Office has purchased a subscription for all BLM offices, so Field Offices should try logging on to the website to see if they have access. If not, Field Offices may need to purchase their own subscriptions (check with the State Botanist to make sure). Calflora's website is: www.calflora.org

e. The information sources above show positive occurrences only. The absence of data from a particular area should not be used as verification that the species does not exist in a given location. Only actual on-the-ground inventories can be used as evidence that particular species are absent from a site.

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2. Inventories must be timed so that target plant species can both be located in the field and positively identified. Inventories conducted to determine the conservation status of individual species or to develop activity plans for individual species can easily be scheduled in advance. Inventories to determine the occurrence of all special status plant species in a given area (e.g., project area, planning area) are more problematic. Inventories must be scheduled so that they will detect all special status species present. A single inventory on a single date will seldom suffice. For example, when one special status plant species suspected of occurring in the area to be inventoried can only be found and identified in April and another species can only be located and identified in August, at least two inventories are necessary. The first inventory can facilitate subsequent inventories if potential sites for later flowering species are flagged during the first inventory.

a. In advance of the project site inventory, known populations of the target species should be visited to determine current year growing conditions and phenology. The absence of certain species in the pre-survey may indicate that those species would not be apparent in the project area survey even if in fact they are present. If flowers or fruits are required to identify a target species and these have not yet developed on the known population, then the project site inventory may need to be delayed a few days or weeks. If, based on these visits to known populations, it appears likely that the project site inventory will fail to detect occurrences because of drought conditions (as may be the case for annual plant species or geophytic plants), it may be necessary to perform additional inventories in the following year.

b. If sufficient information is available on the habitat requirements of potentially occurring species (substrate, plant community, etc.), and the site in question is believed to be unsuitable for those species, a field visit should still be conducted to verify and document the reasons for believing the species to be absent. Ideally, prior to conducting the inventory of the project area, known populations of the target species that occur in similar habitat conditions should be visited to determine growth conditions and phenology.

3. Intensity of inventory should be tied to the objectives of the inventory.

a. If the objectives are to determine the conservation status of a single species, the inventory would likely focus on finding as many occurrences of the species as possible. Inventory efforts could be focused on only those areas and those habitats with the highest probability of finding the target species. If many occurrences are found through such an inventory effort, searching less likely habitat would be unnecessary. If, however, few occurrences are located, the decision might be made to expand the inventory to areas considered less likely to harbor the species.

b. Intensity of inventories conducted to assess the impacts of BLM initiated or authorized actions must be based on both the probability of a special status plant occurring within the project area and the degree of habitat disturbance expected to result from the action. This is covered under IV.E., below.

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D. Qualifications of Personnel Conducting Inventories.

1. Ideally, all personnel conducting inventories for special status plants should have strong backgrounds in plant taxonomy, plant ecology, field sampling design and methods, and knowledge of the flora of the area to be inventoried. Such qualifications help to ensure that all special status plants occurring in the area to be inventoried will be located, including those that were not predicted to occur at the start of the inventory.
2. Focused inventories for one or a few species may be conducted by personnel not possessing all of the qualifications discussed above, as long as these personnel are adequately trained in the identification of the target species.
3. Non-BLM personnel conducting inventories on the public lands must meet the qualifications outlined below (these are adapted from the 2001 recommendations of the California Native Plant Society [CNPS] and the 2009 recommendations of the California Department of Fish and Game [CDFG] as given on CNPS's website at http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf and CDFG's website at http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf). This is particularly important for inventories conducted to evaluate the impacts of projects on special status plants (see IV.E., below):
 - a. Knowledge of plant taxonomy and natural community ecology.
 - b. Familiarity with the plants of the area, including special status species and species designated as "special" by the California Department of Fish and Game, Natural Diversity Data Base.
 - c. Familiarity with the natural communities of the area, including plant communities considered rare by the State of California (see <http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf> for a list of the natural communities currently recognized by the State of California; rare natural communities are asterisked).
 - d. Experience conducting floristic field surveys or experience with floristic surveys conducted under the direction of an experienced surveyor.
 - e. Familiarity with the appropriate state and Federal laws and regulations related to plants and plant collecting.
 - f. Experience with analyzing impacts of development on native plant species and natural communities.

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E. Inventories to Ensure Compliance with the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), and BLM Policy.

1. Five intensity levels of inventory are recognized for the purpose of complying with NEPA, ESA, and BLM policy. These are described and illustrated below.

a. **Field Check.** The surveyor gives the area a quick "once-over" but does not walk completely through the project area (Figure IV-1). The entire project area has not been examined. This is the least intensive level of inventory and is used only when the ground disturbance from a proposed project will be low and the probability of a special status plant being present is also low.

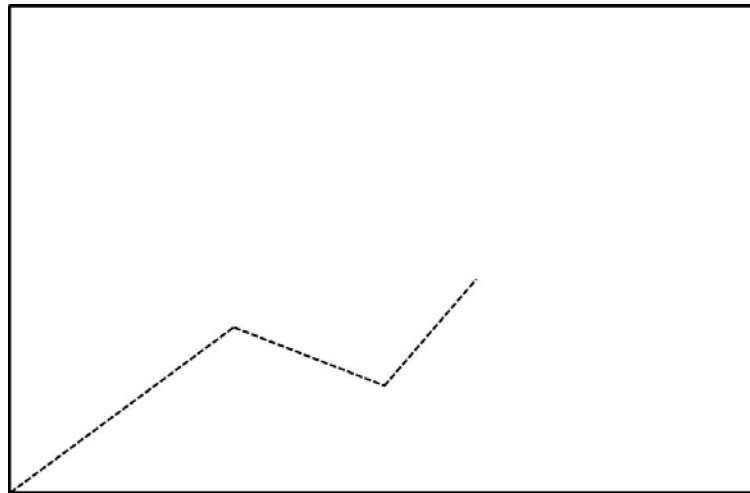


Figure IV-1. Field Check Inventory: the surveyor gives the area a quick "once-over" but does not walk completely through the project area. The entire project area has not been examined.

b. **Cursory.** The surveyor gives the area a quick "once-over" by walking through the project area (Figure IV-2). The entire project area has not been examined. Slightly more intensive than a Field Check (because the surveyor walks completely through the project area), this inventory level should be restricted to situations in which at least one of the criteria (habitat disturbance and probability of occurrence) is low and the other no more than medium (see Table IV-2 for additional caveats on using a cursory inventory).

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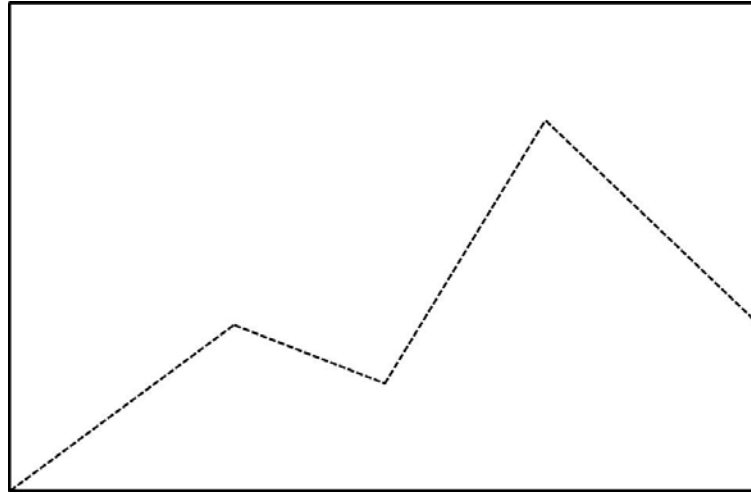


Figure IV-2. Cursory Inventory: the surveyor gives the area a quick "once-over" by walking through the project area. The entire project area has not been examined.

c. **General.** The surveyor gives the area a closer look by walking through the project area and around the perimeter or by walking more than once through the area (Figure IV-3). Most of the project area is examined. A general inventory is appropriate in situations where the probability of occurrence of a rare plant is low or for situations where the habitat disturbance level is low and the project area is too large to easily do an intuitive control inventory (see Table IV-2 for more information).

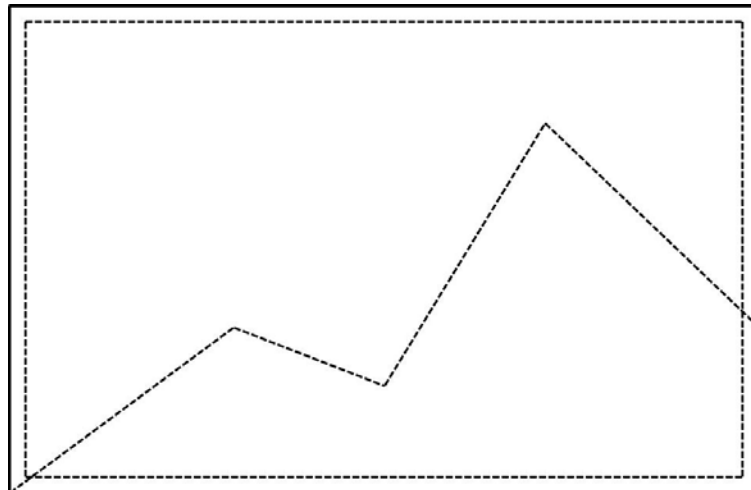


Figure IV-3. General Inventory: The surveyor gives the area a closer look by walking through the project area and around the perimeter or by walking more than once through the area. Most of the project area is examined.

d. **Intuitive Controlled.** An intuitive controlled inventory is a complete survey of habitats with the highest potential for supporting rare plant populations and a less intense survey of all other habitats present (Figure IV-4). This type of inventory can be substituted for a complete inventory (e., below) only when the botanist doing the inventory is

familiar with the habitats of all the plant species that may reasonable be expected to occur in the project area. The botanist traverses through the project area enough to see a representative cross section of all the major plant habitats and topographic features. During the survey the botanist compiles a species list of all plant taxa seen en route and keeps track of the plant community or habitat type where each taxon occurs. The surveyor maps the locations of all rare taxa encountered using a GPS unit and fills out a CNDDDB Native Species Field Survey Form for each location of each rare taxon encountered. When the surveyor arrives at an area of “high potential” habitat, s/he surveys that area completely as described under e., below, and illustrated in Figure IV-5. High potential habitat areas include areas defined in a pre-field review of potential rare plants and habitat and other habitats where a rare species appears during the course of initial field work traversing the project area. Areas within the project area that are not the focus of a complete survey must be surveyed sufficiently so that the botanist and BLM reasonably believe that few if any additional species would be added to the complete species list for the project area. The report must justify why the botanist did not consider these areas to have a high potential for supporting rare plant species and thus did not subject the area to a complete survey.

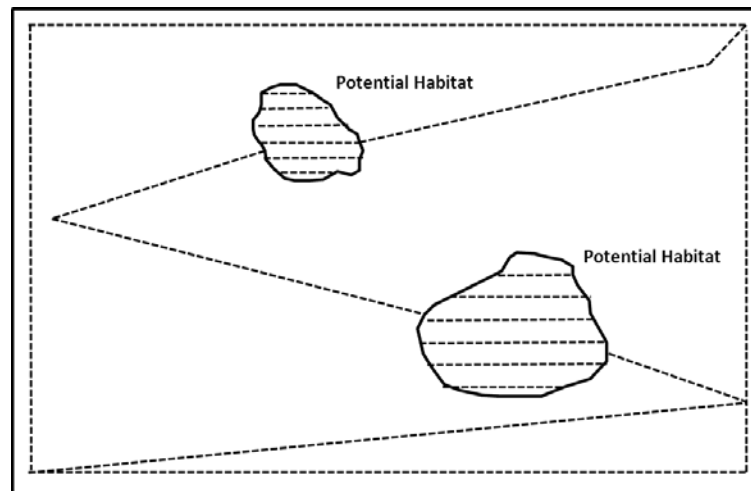


Figure IV-4. Intuitive Controlled Inventory: The surveyor conducts a complete inventory of specific area or areas considered to be potential habitat for rare plants after walking through the project area and around its perimeter or by walking more than once through the area. Most of the project area is examined.

e. **Complete.** A complete inventory is a 100 percent visual examination of the project area using transects (Figure IV-5). The length of the transects and the distance between transects change as the topography and vegetation changes through the project area. Transects should be spaced so that all of the area between transects is visible and so that the smallest rare plant expected to occur is visible. The surveyor: (1) compiles a species list while traversing the project area and keeps track of the plant community or habitat type where each taxon occurs; (2) maps the locations of all rare taxa encountered using a GPS unit; and (3) fills out a CNDDDB Native Species Field Form for each location of each rare plant encountered.

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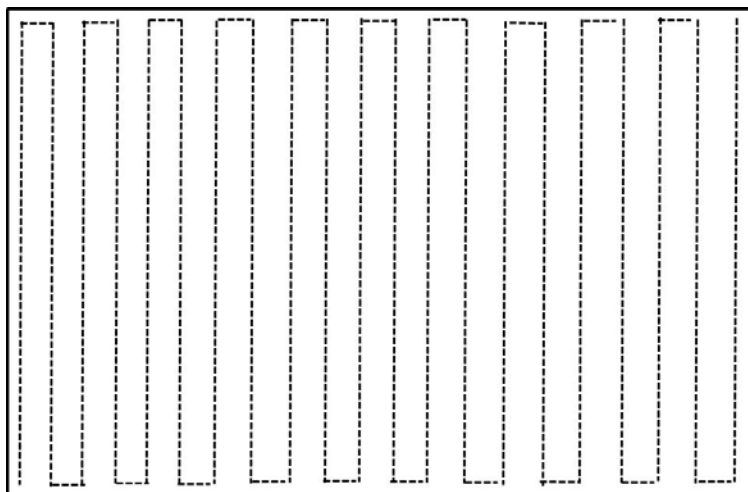


Figure IV-5. Complete Inventory: The surveyor systematically walks transects through the project area until the all of the area has been examined.

2. Any ground-disturbing project that requires an environmental impact statement requires either a complete or intuitive-controlled inventory. For site-specific BLM actions requiring an environmental assessment the minimum intensity level of inventory required is a function of two factors: (1) the probability of occurrence of special status plants in the project area and (2) the level of habitat disturbance associated with the proposed action. Both of these factors are ranked as "Low," "Medium," or "High," based on the criteria given in Figure IV-6 and Table IV-1. The minimum level of inventory required is then determined by Table IV-2.

Note that these are *minimum* intensity levels of inventory. A more intensive inventory may be required by the BLM authorized officer in a particular situation, especially when highly threatened plants are involved and/or significant ground disturbance is expected from a proposed project. Regardless of the initial intensity level, if special status plant species are located during the inventory, a complete inventory must be conducted of the plant location(s) and potential habitat areas.

Also note that for Federally listed plant species, the minimum levels of inventory given in Table IV-2 may not be adequate to make a "no effect" determination. Only if the BLM has determined that there is no probability of a listed plant occurring within the project area or has performed either a complete or intuitive controlled inventory with negative results can a "no effect" determination be made.¹ A finding of "no probability" can be based on the project area lying outside the known range of a listed plant species or on the fact that there is absolutely no

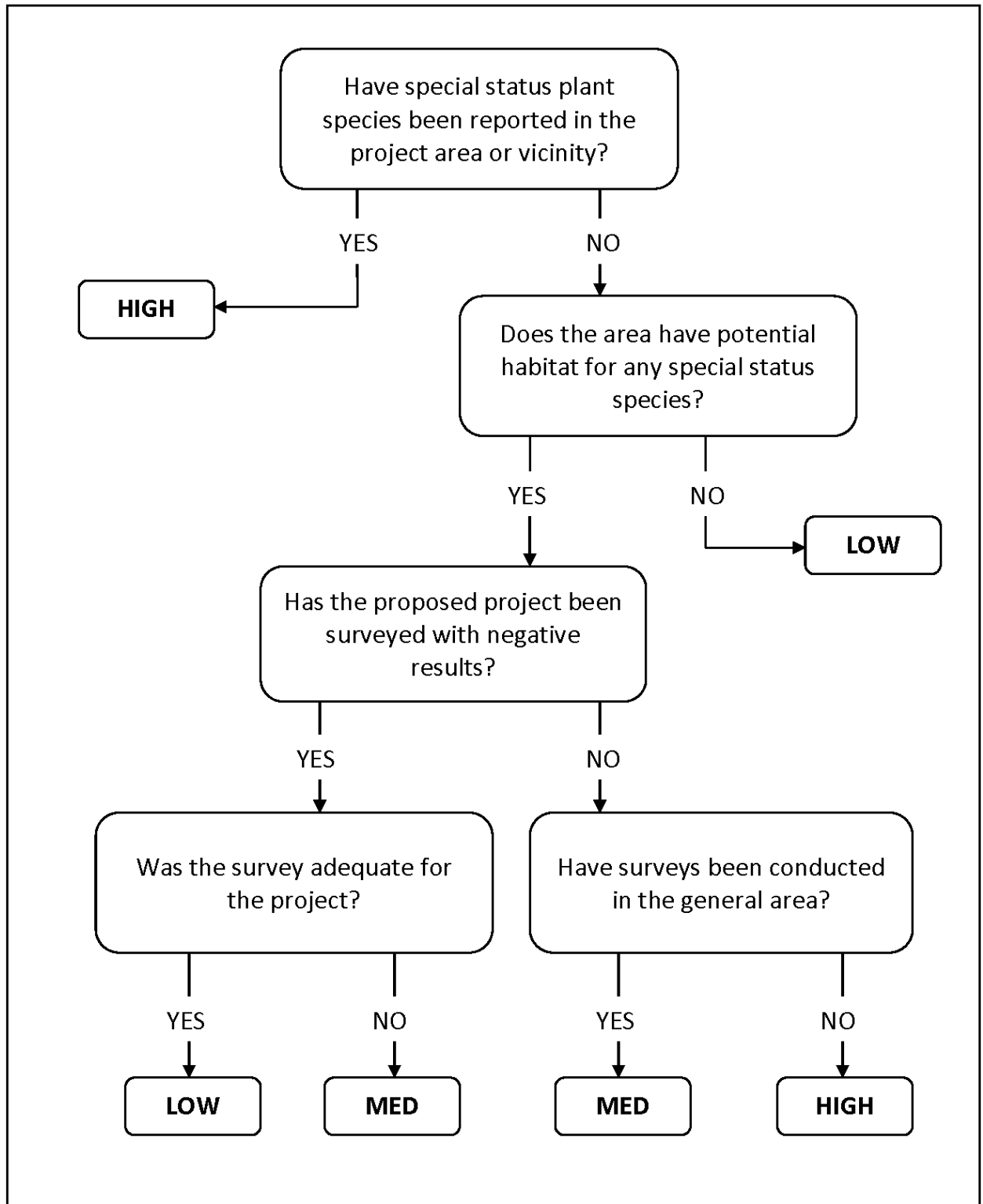
¹ If the project covers a large area, a no effect determination can be made even if a Federally-listed plant species is found in the project area, as long as it can be shown that the actual project implementation will not affect any individual plants. This determination, however, would require completion of a complete or intuitive controlled survey—with negative results--of the areas that will be actually disturbed by the project.

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suitable habitat for the species in the project area. Otherwise, the BLM must obtain the concurrence of the FWS that the minimum inventory level for a listed plant is adequate for a specific project.

3. Many special status plant inventories of public lands conducted to assess the impacts of a project are performed by consultants hired by project proponents. These inventories must meet or exceed the intensity level demanded by the project (IV.E.2, above) and the BLM authorized officer. Personnel conducting the inventory must meet the qualifications outlined in IV.D.3, above. In order for the BLM to adequately determine the quality of such third party inventories, a complete written report is required from consultants, which must contain all of the information detailed in F.3, below.

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Figure IV-6. Probability of occurrence of special status plant species.

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Table IV-1. Potential for site disturbance from various actions.

Type of Project	Habitat Disturbance Level
Forest Management	
Large green sales (>500 mbf)	High
Small green sales (<500 mbf)	Medium to High
Salvage sales	Low to High depending on intensity
Commercial thinning sales	Medium to High
Rotary axe cutting (low ground pressure)	Low to Medium
Chainsaw cutting site prep & release	Low
Tractor piling	High
Chemical site prep & release (spot spray)	Low
Vegetation treatment (brush spraying, burn, etc.)	Medium to High
Ripping site prep	High
Cutting and grubbing release (normally 24” spot around tree)	Low
Planting	Low
Hand piling	Low
Pile burning	Low
Broadcast or under-burning	Low to Medium
Firewood cutting/green	Low to Medium
Firewood cutting/dead	Low to Medium
Road Construction and Maintenance	
Road construction	High
Road maintenance	Low
Grazing Management	
Grazing permits/leases	Low to High depending on vulnerability of particular plant species
Fences	Low
Cattleguards	Low
Seedings	High
Vegetation treatments	Medium to High
Windmills	Low (for project construction; concentrated grazing that may result in vicinity of troughs Medium to High)
Water pipelines	Low to Medium (for project construction; concentrated grazing that may result in vicinity of troughs Medium to High)
Spring developments	Low to High
Reservoirs	High

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Type of Project	Habitat Disturbance Level
Recreation	
OHVs – play use	Medium to High
OHVs – ancillary use	Low
Facility construction	High
Back country use (hiking, mountain biking, horseback riding, hunting, river running, etc.)	Low
Facility maintenance	Low
Toilet or minor facility placement	Low
Cultural Resource Management	
Subsurface data recovery – sampling	Low (coring) to Medium (trenching)
Subsurface data recovery –100 percent	High
Public Land Disposals	High
Rights-of-Way Permits	
Gas/Oil pipelines	Medium to High
Buried cables	Medium to High
Transmission lines	Medium to High
Wind energy development	High
Solar development	High
Hydro development	Medium to High
Communication sites	High
Access/with road construction	High
Access/existing road	Low
Desert land entries	High
Fire Management	
Fire breaks – tractor	High
Fuel breaks – shaded (cut & burn)	Low to Medium
Prescribed burning	Low to High
Fire rehabilitation	Low to High
Retardant drops	Low to Medium
Mineral Resource Management	
Fluids (Oil and Gas and Geothermal)	
Surface use plans for application for permits to drill (APDs)	High
Surface use plan amendment	High
Sundry notices	Low to High
Geophysical exploration	Low to High

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Type of Project	Habitat Disturbance Level
Pipelines	Low to High
Transmission lines	Low to High
Power plant site	High
Solids	
Mining notices (43 CFR 3809)	Medium to High
Mining plans of operations (includes all forms of hardrock exploration and development)	Medium to High
Exploration plan for mineral material (43 CFR 3600)	Low to Medium
Exploration plan for hardrock leasing	Medium to High
Exploration plan for acquired lands	Medium to High
Soil Sampling	Low (coring) to High (trenching)
Wildlife Management	
Guzzlers	Low (for project construction; concentrated grazing that may result in vicinity of troughs Low to High depending on type of wildlife and potential numbers)
Wildlife reintroductions	Low
Chaining	High
Stream restoration	Low to High
Wetland restoration	Low to High

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Table IV-2. Determining minimum intensity of inventory based on habitat disturbance level and probability of occurrence of special status plants. Any ground-disturbing project that requires an environmental impact statement requires either a complete or intuitive-controlled inventory, as determined based on the considerations given in footnote 1 to this table. For site-specific BLM actions requiring an environmental assessment the minimum intensity level of inventory is determined as shown below. Note that this is the *minimum* intensity of inventory. The authorized officer may designate a higher intensity of inventory in specific cases. If a Federally-listed endangered or threatened plant may occur within a project area, the actual intensity of the inventory will likely be greater than the minimum intensity shown below.

Habitat Disturbance Level (from Table IV-1)	Probability of Occurrence (from Figure IV-6)	Minimum Intensity of Inventory
High	High	Complete or Intuitive Controlled ¹
Medium	High	Complete or Intuitive Controlled ²
High	Medium	Complete or Intuitive Controlled ²
Low	High	Intuitive Controlled or General ²
High	Low	General
Medium	Medium	Intuitive Controlled or General ³
Low	Medium	Intuitive Controlled or Cursory ³
Medium	Low	Cursory
Low	Low	Field Check

F. Documenting the Results of Inventory.

1. The results of special status plant inventories should be well documented. This documentation must include, as a minimum, the completion and submission of

California Native Species Field Survey Forms or other submittal formats acceptable to the CNDDDB for locations of each special status plant and CDFG “special” vascular plant, bryophyte, and lichen species detected. To download a California Native Species Field Survey Form, obtain information on formats acceptable to CNDDDB, and read directions on submitting information to CNDDDB see: http://www.dfg.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp.

¹ Do a complete inventory if entire project area has medium to high probability of occurrence, an intuitive controlled inventory if some of the area has a low probability of occurrence (but the entire medium to high probability habitat within the project area must be completely inventoried).

² Do an intuitive controlled inventory if the project area is relatively small, a general inventory otherwise. If the “low” habitat disturbance level is based on the fact that the disturbance will be very localized relative to the project area, do an intuitive controlled inventory of the area that will be directly disturbed and a general inventory elsewhere in the project area.

³ Do an intuitive controlled inventory if the project area is relatively small, a cursory inventory otherwise. If the “low” habitat disturbance level is based on the fact that the disturbance will be localized relative to the project area, do an intuitive controlled inventory of the area that will be directly disturbed and a cursory inventory elsewhere in the project area.

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2. If the inventory discovers any unusual plant communities, a California Natural Community Field Survey Form must be completed for each such community and submitted to the California Department of Fish and Game Vegetation Classification and Mapping Program (VegCAMP). To download a California Natural Community Field Survey Form, obtain information on formats acceptable to VegCAMP, and read directions on submitting information to VegCAMP see:

http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_submit.asp

3. A written report documenting results should be prepared for most inventories. Such a report should include the following (adapted from the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities, State of California, California Natural Resources Agency, Department of Fish and Game, November 24, 2009, online at:

http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf):

a. Project description, including a detailed map of the project location and study area that identifies topographic and landscape features and includes a north arrow and bar scale. Spatial data in the form of shape files or geodatabases should also be provided in digital format, along with metadata including the datum used.

b. A written description of the biological setting, including a vegetation map. The vegetation map should be created from a natural community classification that uses the National Vegetation Classification System (<http://biology.usgs.gov/npsveg/nvcs.html>), such as the classification employed in *A Manual of California Vegetation, Second Edition* (Sawyer, Keeler-Wolf, and Evens, 2009, California Native Plant Society, Sacramento, CA). A list of the natural communities recognized in the *A Manual of California Vegetation, Second Edition* can be found at:

http://www.dfg.ca.gov/biogeodata/vegcamp/natural_communities.asp

If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide a crosswalk to the National Vegetation Classification System.

c. A detailed description of the inventory methodology.

d. Dates of field inventories, indicating which areas were inventoried on which dates, names of field investigator(s), and total person-hours spent on field inventories.

e. A discussion of how the timing of the inventories affects the comprehensiveness of the inventory.

f. A list of potential special status plant species and other vascular plant, bryophyte, and lichen species recognized as “special” by the California Natural Diversity Data Base.

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- g. A description of the area inventoried relative to the project area.
- h. References consulted, persons contacted, and herbaria visited.
- i. Description of reference site(s), if visited, and phenological development of special status plant(s).
- j. A list of all taxa occurring on the project site. Identify plants to the taxonomic level necessary to determine whether or not they are a special status species.
- k. A discussion of any existing surveys that were used and a discussion of their applicability to this project.
- l. A discussion of the potential for a false negative inventory.
- m. Detailed data and maps for all special status plants and CDFG “special” plants detected. California Native Species Field Survey Forms or other submittal formats acceptable to the CNDDDB should be provided for locations of each special status plant and CDFG “special” plants detected. For information on formats acceptable to CNDDDB see: http://www.dfg.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp.
- n. Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms should be sent to the CNDDDB and included in the environmental document as an appendix. It is not necessary to submit entire environmental documents to the CNDDDB.
- o. The location of voucher specimens, if collected.
- p. Assessments of the health, population size, and protective status of any special status plants found.
- q. A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution.
- r. A discussion of direct, indirect, and cumulative impacts to the special status plants.
- s. A discussion of threats, including those from invasive species, to the special status plants.
- t. A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species.
- u. A discussion of the immediacy of potential impacts.

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- v. Recommended measures to avoid, minimize, or mitigate impacts.
- w. The name(s) and qualifications of the persons conducting the inventory.
- x. Additional data needs.
- y. Other information as appropriate.

4. Voucher specimens of special status plants should be collected if necessary to conclusively document the occurrence of the species if the collection will not adversely affect the health of the population at the site. Collection of Federally listed plants on Federal lands requires a permit from the FWS. If voucher specimens are collected, they should be deposited in major recognized herbaria for future reference, preferably the University of California, Berkeley (UC), The Jepson Herbarium (JEPS), The California Academy of Sciences (CAS), or Rancho Santa Ana Botanic Garden (RSA).

5. Photographs should be taken of the areas inventoried, of all special status plants found, and of the habitat associated with each special status plant occurrence.

G. Exemption from Inventory Requirements (Worst Case Analysis).

1. If, because of timing or workload problems, a District or Field Office Manager wishes to proceed with a project without complying with the inventory requirements detailed above, s/he may submit a written request to the State Director for exemption from these requirements. Such requests can only apply to projects initiated by BLM; no projects initiated by third parties will be exempted from the requirements of this manual handbook. The State Director will only entertain exemption requests for sensitive species: no exemption will be approved for Federally listed threatened or endangered species. Such a request for exemption must assume that the project area contains populations of all sensitive species that are suspected to occur in the area. The exemption request must include the following:

- a. Reasons why the area cannot be inventoried pursuant to the requirements given in this handbook.
- b. An analysis of the likely effects of the project action on the special status plant species presumed to be present.
- c. A discussion of why the impacts of the project on these plant species will not contribute to the need for FWS to list the sensitive species as endangered or threatened.
- d. Mitigation measures proposed.

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2. The State Director will review each exemption request and document the reasons for approval or disapproval in a memorandum to the District or Field Office Manager who initiated the request.

3. Requests for exemption should be the exception and not the rule. The inventory requirements documented in this handbook should be followed to the maximum extent possible.

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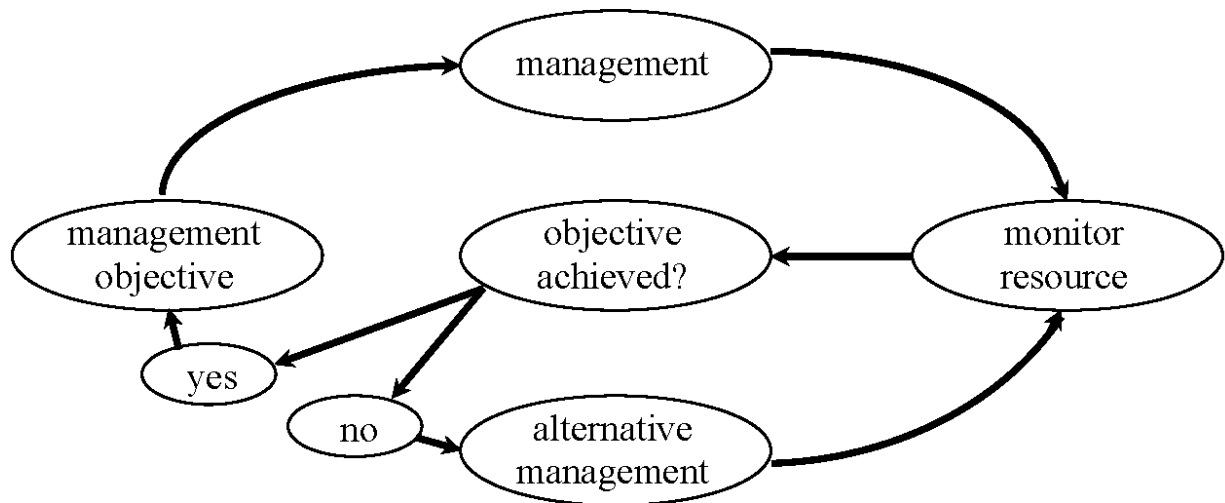
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CHAPTER V**V. MONITORING****A. Monitoring Studies and Adaptive Management.**

1. Monitoring is the collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting a management objective.

2. Monitoring is a key part of the adaptive management process (Figure V.1).

Figure V-1. Diagram of a successful adaptive management cycle.



3. As a key part of the adaptive management cycle, monitoring is dependent upon two key concepts:

a. Monitoring must be driven by management objectives.

1). What is measured, how well it is measured, and how often it is measured are design features that are defined by how a management objective is articulated.

2). The management objective defines the desired condition, management is designed to meet the objective, and monitoring is designed to determine if the objective has been met.

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3). Management objectives form the foundation of the entire monitoring project.

b. Monitoring is initiated only if opportunities for management change exist.

1). If no alternative management options are available, expending resources measuring a trend in a species' population is futile.

2). Because monitoring resources are limited, they should be directed toward species for which management solutions are available.

4. Refer to BLM Technical Reference 1730-1, Measuring and Monitoring Plant Populations, for guidance on setting management objectives and designing monitoring studies to evaluate whether management objectives are met.

B. Qualitative Monitoring.

1. Because quantitative monitoring is more expensive, most monitoring will involve qualitative evaluations of whether management objectives are met.

2. Qualitative methods include:

a. Presence or absence.

1). Noting whether the species of interest is still at a site may be an effective way to monitor many roadside populations.

2). Populations along roads can be noted by a "windshield check" by other specialists in the course of their work.

3). Although whether a species is still present is important for all occurrences, not just those along roads, the observer will want to collect more additional information at those sites s/he has taken the time to travel to.

b. Site condition assessment.

1). Site condition assessments provide a repeated evaluation of the quality of the habitat.

2). This type of monitoring is designed to detect obvious and dramatic changes that can be recorded photographically, with video, or in written descriptions aided by a standard form.

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3). Such assessments can detect important threats to a species' habitat, such as site disturbances from unauthorized use of off-highway vehicles, mineral and other types of trespass, or weed encroachment.

c. Visual estimates of population size.

1). In this type of monitoring, visual estimates are made of population size, often in classes such as 0, 1-10, 11-100, 101-1000, 1001-5000, etc.

2). These estimates provide more information than simply noting presence or absence.

d. Estimates of demographic distribution.

1). A population's demographic distribution is the percentage of the population or the number of individuals within stage classes such as seedling, non-reproductive adult, reproductive, and senescent.

2). Stage classes that are absent or poorly represented may signal potential problems with the population.

e. Assessment of population condition.

1). The observer evaluates the condition of the population by noting occurrence and extent of utilization, disease, predation, and other factors.

2). Combined with site condition assessment (V.B.2.b., above), this method allows for a complete qualitative evaluation of the threats facing the population.

f. Photopoints.

1). Photopoints are photographs that are retaken from the same position and in the same direction at each site visit.

2). Use photopoints abundantly as a standard part of both quantitative and qualitative monitoring.

3). Photopoints should be used to document the following:

a). Location of study site. Consider taking photographs at the parking spot and along the walking path to the study site. At the study site, photographs taken from the boundary of the population or study site facing both toward and away from the site can help relocate boundaries if other monuments are lost.

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b). Transects and macroplots. Photographs taken at each end of a transect or at the four corners of a macroplot can help to relocate the transect or plot and provide a visual record of general conditions.

c.) Habitat conditions. Photographs of general habitat can help you monitor changes in plant cover, weed invasion, and disturbances.

d). Population conditions. Plant height, flowering effort, plant size, and levels of herbivory are some of the conditions that can be illustrated with photopoints.

4). BLM Technical Reference 1730-1, Measuring and Monitoring Plant Populations, includes more information on taking photographs as a part of monitoring, including hints for monitoring with photopoints and photoplots (discussed below).

5). Also refer to the excellent books by Frederick Hall on photographic monitoring: *Ground-Based Photographic Monitoring*, USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-503, May 2001; *Photo Point Monitoring Handbook: Part A—Field Procedures*, USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-526, March 2002; and *Photo Point Monitoring Handbook: Part B—Concepts and Analysis*, USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-526, March 2002. All of these documents can be downloaded from: <http://www.treesearch.fs.fed.us/> Type in “Frederick Hall” in the author search box to find these and other publications on photomonitoring.

g. Photoplots.

1). Photoplots are photographs of a defined small area (a plot), usually the size of the photograph frame or slightly smaller, taken vertically (straight down) from above at a specified height.

2). Photoplots are usually defined on the ground with a standard-size frame. Typical ones are 3 x 3 foot or 5 x 5 foot. See BLM Technical Reference 1730-1, Measuring and Monitoring Plant Populations, pg. 162, for an illustration of these plots.

3). Photoplots can provide qualitative records of condition within a limited area from year to year. Their key value is to provide a visual permanent record of the past, allowing factors and changes to be evaluated that might not have been considered when the monitoring was initiated. They can be used to evaluate invasion by exotic or weedy species, successional changes, soil disturbance, and trampling.

4). Cover and even density can be measured on photoplots (the latter only if individuals can be identified and delineated).

5). One major disadvantage in the use of photoplots is the fact that each photoplot documents such a small area of ground. This may mean that the changes

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observed in the photoplot are not truly indicative of changes in the larger area each photoplot is supposed to represent.

h. Boundary mapping.

1). Boundary mapping involves measuring or monitoring the boundaries of an occurrence and tracking changes in spatial location or size.

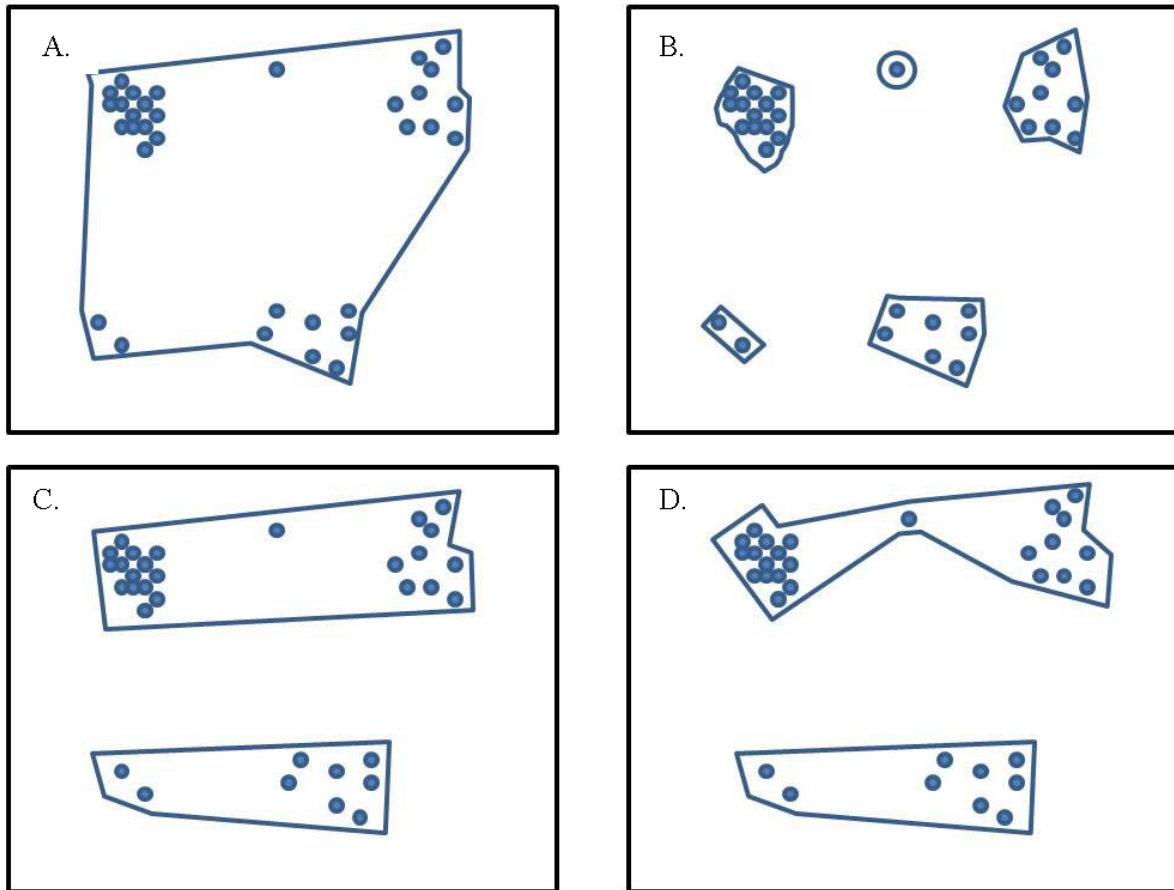
2). Boundary mapping would normally be accomplished by walking the circumference of an occurrence and recording the boundary using a global positioning system (GPS), although there are other techniques that can be used that are described in BLM Technical Reference 1730-1, Measuring and Monitoring Plant Populations, pg. 161.

3). Using a GPS enables quick and accurate incorporation into a geographic information system (GIS). For best results at least a resource grade GPS unit should be used and the collected data post processed using data from fixed reference stations.

4). To allow meaningful comparisons of occupied area between years, consistent rules regarding the gaps between occurrences and sub-occurrences must be applied. In California, the California Natural Diversity Data Base has defined an element occurrence for plants as: a population or group of populations found within 0.25 miles of each other and not separated by significant habitat discontinuities, so the following discussion pertains to the mapping of sub-occurrences (groups of plants within 0.25 miles of each other.) Figure V.2 shows the same occurrence mapped four ways (each circle is an individual plant). In example A, none of the gaps between plants were considered large enough to map separate sub-occurrences. In example B, all of the gaps between clumps were considered large enough to treat each clump as a separate sub-occurrence (one of these “clumps” consists of a single plant). Examples C and D show two additional interpretations of gap distance. Without explicit rules regarding what length gaps are required to map clumps as separate sub-occurrences, as well as how to map sub-occurrences containing single plants, it will be impossible to discern whether differences in occurrence areas between years result from actual changes in occupied area or from differences in how sub-occurrences were delineated.

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Figure V-2. The same sub-occurrence mapped four ways. See text for explanation.



i. Remote sensing.

1). Remote sensing encompasses a range of techniques that involve the collection of spectral data from a platform that does not touch the object of interest. This definition is somewhat vague because of the range of remote sensing techniques, from taking photographs from a camera mounted on a helium or hot air balloon to satellite-based imagery.

2). Generally speaking, low level aerial photography (scales of 1:500 to 1:6000) provides the most valuable information with respect to rare plant monitoring. It can be used in lieu of ground measurements to monitor some rare plant species so long as those species are large enough to be delineated (e.g., woody species or large herbaceous perennials). It can be a very effective technique for assessing the condition of the habitat occupied by a rare plant species. For example, disturbances by fire, flooding, erosion events, and off-highway vehicle route proliferation are readily observed through low level aerial photography.

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3). Higher level aerial photography and satellite imagery may be helpful in delineating potential habitat areas in which to search for rare plants or to monitor large habitat disturbances, but as a rule are less valuable for rare plant monitoring.

4). Although listed here under qualitative monitoring techniques, aerial photography, particularly low level aerial photography, can be used as a quantitative technique, whereby cover or frequency are measured directly on aerial photographs. For example, in assessing the degree of OHV use in the Algodones Dunes, the cover of vehicle tracks on a heavy use weekend was measured in various areas of the dunes by randomly locating 10 by 10 grids on georeferenced aerial photographs taken during the weekend and counting the number of grid intersections that fell on vehicle tracks.

3. Well-articulated management objectives are necessary even for situations in which the objectives will be evaluated using qualitative methods.

4. Refer to BLM Technical Reference 1730-1, Measuring and Monitoring Plant Populations, for further information on qualitative monitoring.

C. Quantitative Monitoring.

1. Although more expensive and labor intensive than qualitative monitoring, quantitative monitoring will be required for certain species and/or populations.

a. Some species may have recovery plans or other plans that require quantitative monitoring.

b. Some species may be so rare or threatened that quantitative monitoring is warranted because it will detect population changes smaller than those that would be obvious using qualitative techniques.

c. Cryptic species often require quantitative techniques to obtain accurate estimates of population size or other attribute. For example, searching for plants in quadrats (small plots) forces the observer to examine smaller areas intensively, with the likely result that plants are discovered and counted (or otherwise measured) that would have been overlooked in a census or qualitative estimate of a larger area.

d. Some species may be best monitored using a combination of quantitative and qualitative techniques: one or a few occurrences may be monitored quantitatively and the other occurrences monitored qualitatively.

2. Quantitative monitoring requires that some attribute of the target plant species be measured.

a. Attributes can include density (which can then be converted to population size), frequency, cover, height, number of flowering stems, etc.

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b. Quantitative monitoring usually involves sampling, but in some cases a complete census can be performed (e.g., when population size is the attribute of interest and an occurrence only has a small number of individual plants).

3. Quantitative monitoring involving sampling is too large a topic to be covered in this Handbook.

a. Such monitoring should follow the procedures discussed in BLM Technical Reference 1730-1, Measuring and Monitoring Plant Populations.

b. As discussed in Technical Reference 1730-1, a pilot study is absolutely essential before sinking too much time and effort into a quantitative monitoring study.

c. Make sure there is sufficient commitment in terms of time, money, and personnel before committing to a quantitative monitoring study.

1). Ensure that management is aware that quantitative studies require much more time than that required to conduct the field portion of the study.

2). Adequate analysis, interpretation, and reporting often require much more time than the field portion of the study.

4. It is vital that a monitoring study plan be developed for each plant species monitored.

a. The study plan, at a minimum, needs to include the following components:

1). Species and sites to be monitored

2). Management objectives

3). Sampling objectives

4). Actions to be taken if management objectives are not met.

5). Study design

6). Method of analysis

b. The study plan should be circulated for review among co-workers, managers, other botanists, and other interested parties prior to conducting the monitoring.

5. The results of each monitoring study should be documented in periodic (ideally annual) reports.

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a. A non-technical summary report should be prepared for managers and the public.

b. A technical report should be prepared and circulated to botanists and other interested specialists.

6. Consult BLM Technical Reference 1730-1, Measuring and Monitoring Plant Populations, for guidance on designing, implementing, and analyzing quantitative monitoring studies to evaluate management success.

D. Monitoring Priority.

1. Although all species should be monitored at some level, some species require more intensive monitoring than others. Decisions on prioritizing sensitive species for monitoring should be based upon degrees of rarity, existing threats, and potential conflict. Existing threats include management actions, declining or widely fluctuating populations, and poor or changing habitat. Potential conflict should take into account future management actions and Bureau/public interest.

2. The following rating system is for determining monitoring priority for listed and proposed plant species. If a species is included in an existing activity plan that calls for a certain level of monitoring, then its rank should be increased as needed. Note that these are *minimum* monitoring standards. More intensive and/or more frequent monitoring may be required for particular plant species and situations.

Level of existing threats on BLM land

2 pts	high
1 pt	medium
0 pts	low

Number of known occurrences on BLM land

2 pts	< 5 occurrences
1 pt	6-20 occurrences
0 pts	> 20 occurrences

Degree of potential conflict

2 pts	high
1 pt	medium
0 pts	low or absent

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Rating	Minimum Monitoring Level
5 or 6 points	Annual qualitative monitoring of each occurrence, including filling out a California Native Species Field Survey Form. Consider using quantitative monitoring if appropriate on at least one occurrence.
3 or 4 points	Qualitative monitoring of at least the most important or most threatened occurrences every three years, including filling out a California Native Species Field Survey Form. Consider using quantitative monitoring if appropriate on at least one occurrence.
1 or 2 points	Qualitative monitoring, including filling out a California Native Species Field Survey Form every five years for at least the most important or threatened occurrences.

3. BLM Technical Reference 1730-1, Measuring and Monitoring Plant Populations, pp. 29-34, provides additional tools to help allocate monitoring resources among species and occurrences.

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CHAPTER VI**VI. BIOLOGICAL ASSESSMENTS AND BIOLOGICAL EVALUATIONS****A. Biological Assessments.**

1. A biological assessment is a document that evaluates the potential effects of a Federal action on listed and proposed species and designated or proposed critical habitat. A primary purpose of the biological assessment is to determine whether any listed species or designated critical habitats are likely to be adversely affected by the action and whether formal Section 7 consultation or conference is necessary. If the biological assessment concludes there will be no effect on listed species or designated critical habitat, then no consultation is required and the proposed action can proceed. If the biological assessment concludes there will be an effect on a listed species or designated critical habitat but the effect will not be adverse to the species or will be beneficial to the species, the authorized officer will send a memorandum to the Fish and Wildlife Service (FWS) requesting written concurrence with this conclusion through informal consultation. If the biological assessment concludes that the proposed action will adversely affect a listed species or designated critical habitat (or if FWS does not concur with a conclusion of no adverse effect), the authorized officer will transmit the biological assessment to FWS with a memorandum requesting initiation of formal consultation. Figure VI-1 is a flowchart of steps in the Section 7 consultation process showing where the biological assessment fits in the process.

2. If only proposed species or proposed critical habitat occur in the project area formal consultation is not required. If, however, the biological assessment concludes that the proposed action may adversely affect the proposed species or result in the destruction or adverse modification of proposed critical habitat then conference with FWS is required (50 CFR 402.10). In this case the authorized officer will transmit the biological assessment to FWS with a memorandum to FWS requesting initiation of formal conference.⁵

3. Guidance concerning the subjects to be addressed in the biological assessment is provided in 50 CFR 402.12(f) and BLM Manual 6840. A species list for the project area is required for all biological assessments. The species list for the project area can be obtained from FWS, or a list of species may be provided to the FWS for written concurrence. The latter action is recommended for most situations. The biological assessment must identify and evaluate effects on all listed and proposed species and designated and proposed critical habitat that may occur in the project area. The biological assessment should be initiated within

⁵ Although the Endangered Species Act and its regulations do not require that the conference be formal, it is always beneficial to BLM to make the conference formal, as the results of a formal conference can be adopted as the biological opinion if no significant new information is developed and no significant changes are made to the proposed action that would alter the content of the opinion (50 CFR 402.10).

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90 days after receipt of the species list, and completed within 180 days after receipt. If this timeframe is exceeded, an updated species list should be requested or submitted.

4. The biological assessment should address potential effects of the proposed action only on Federally listed and proposed species and/or Federally designated and proposed critical habitat. Potential effects of the proposed action on sensitive species are addressed in a biological evaluation, discussed below.

B. Biological Evaluations.

1. Biological evaluations are similar to biological assessments, except that they apply to BLM sensitive species, not Federally listed or proposed species, and they are not forwarded to FWS as part of a formal or informal consultation process. Consequently, there is no 180 day timeframe and the evaluation can be in the form of a report or other document. Unlike biological assessments, biological evaluations are typically not standalone documents but are part of a NEPA document such as an environmental assessment or environmental impact statement.

2. The biological evaluation assesses the potential effects of the proposed action on sensitive species that occur within the project area.

3. A proposed action that—after proposed mitigation actions—will result in adverse impacts to a sensitive species requires concurrence from the State Director before the action can proceed.

C. Biological Opinions.

1. After receiving and analyzing the biological assessment FWS will issue a biological opinion as to whether there will be "jeopardy" to the species or "adverse modification" to critical habitat. Most findings of "jeopardy" are accompanied by reasonable and prudent alternatives that would allow the project to proceed. If no reasonable and prudent alternatives can be agreed upon, the proposed project must be abandoned. While Federal agencies, the Governor, or a permit or license applicant may apply for an exemption for an agency action, this has rarely been done in the past.

2. FWS often includes conservation recommendations in a biological opinion that concludes there will be no jeopardy to the species. Although these are not binding, it is BLM policy to implement all of these recommendations unless there are compelling reasons not to do so. These reasons should be committed to writing and a copy forwarded to the State Director. Unlike the situation with listed animals, there are no incidental take provisions for plants listed under the ESA.

3. Refer to Figure V1-1 which illustrates the Section 7 consultation process as a flow chart.

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Figure VI-1. Flow chart for the Section 7 Consultation Process (for Listed/Proposed Species or Listed/Proposed Critical Habitat).

